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Title of the Invention

Radial Bearing

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Description

Field of the Invention

15 Radial bearing which is disposed between two transmission parts rotating in opposition to one another at different speed, with the bearing including an inner and/or outer sleeve between the with rolling bodies and the transmission parts.

Background of the Invention

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It is generally known to secure the inner and/or outer sleeve of a radial bearing in dependence on the load on the bearing in or on the transmission part in such a manner as to ensure a secure fit of the sleeve in axial direction and in circumferential direction.

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It is further known, DE- 43 32 028 A1, to so configure a radial bearing in the form of a pressure fluid operated bearing whereby the pressure fluid is conducted via one of the components through an opening in the inner sleeve, through the bearing, through a further opening in the outer sleeve into a transmission part, or

in reverse flow direction. As the openings in the inner and outer sleeves are part of the passageway for conduction of the pressure fluid, it is important that the sleeves are restrained in the respective transmission part against movement in axial direction and against rotation.

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Still, it has been shown that despite the press-fit of the sleeves on or in the transmission part, a firm seat cannot be sufficiently ensured. This may lead to considerable damage on the bearing and faulty controls of the transmission.

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### Object of the Invention

It is therefore an object of the invention to construct a radial bearing or its inner and/or outer sleeve in such a way as to ensure their secure fit on or in the respective transmission part. This should be realized in a simple and cost-efficient manner, without additional components like clamp devices, screwed connections and the like.

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### Summary of the Invention

20 The object of the invention is attained by providing the inner and/or outer sleeve prior to installation on or in the transmission part with a coating which contains ZnNi or ZnFe and is applied galvanically.

Such a galvanic coating is known in the field of bearing surface and disclosed in an INA- special reproduction "Galvanotechnik" [*Galvano Technique*], No. 12, 25 December 1993, which describes such a coating, called Corrotect. This coating, described there, involves however only a coating provided for protecting roller bearings and machine elements against rust. Further insights cannot be ascertained from this publication.

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In contrast thereto, it has been shown that this coating is also suitable for better adhesion of components that are arranged within one another or upon one another. A respectively coated inner and/or outer sleeve exhibits a substantially enhanced adhesion on or in the respective transmission part so as to ensure a secure seat.

This improved seat is especially of importance when the inner and/or outer sleeve is part of a pressure fluid operated radial bearing which is disposed in a transmission that is controlled by pressure fluid and has transmission parts in the form of a carrier element and a clutch drum, and the inner and/or the outer sleeve have openings for passage of the pressure medium from and to bores in the carrier element and the clutch drum.

A particular secure and good attachment can be ensured, when the sleeves are arranged by means of press fit made on or in transmission part.

A secure seat is even ensured, when the sleeves, which are typically made of roller bearing steels, interact with the transmission parts made of cast iron material.

It is expressly noted that the measure according to the invention is not limited to inner or outer sleeves of radial bearings but the improvement of the seat of the sleeve is generally improved by the proposed galvanic coating and the invention may therefore be applicable in any sleeves.

#### Brief Description of the Drawings

The invention is further described with reference to the drawing which depicts in a simplified manner an exemplary embodiment of the invention.

The Figure shows a longitudinal section through transmission parts of a transmission operated by means of pressure medium.

### Detailed Description of the Drawing

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In FIG. 1, a carrier element is designated by 1 which, although not shown, is mounted to a gear box. The carrier element 1 includes an attachment arm 2 and a cylindrical body 3, with a radial bearing 4 disposed on the outer surface of the cylinder body 3. The radial bearing 4 includes an inner sleeve 5 and an outer sleeve 6 between which rolling bodies, a rolling body cage and seals are arranged in a manner generally known.

15 Provided in the attachment arm 2 and the cylinder body 3 is a pressure medium feed bore 7 which is effectively connected with openings 8 in the inner 5 and outer sleeve 6. The outer sleeve 6 is fitted in a clutch drum 9 which has further an annular space for accommodating a piston 11 and clutch disks which are acted upon by the piston. Connected to the opening 8 in the outer sleeve 6 is a pressure medium bore 10 in the clutch drum 9 for conducting pressure medium to the piston in the clutch drum 9.

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To ensure that the inner sleeve 5 is restrained against carrying out an axial movement and restrained against rotation upon the cylinder body 2 and that the outer sleeve 6 is restrained against carrying out an axial movement and restrained against rotation in the clutch drum 9, the sleeves are provided in accordance with  
25 the invention with a galvanically applied coating 11 which contains ZnNi or ZnFe.

## List of Reference Signs

	1	carrier element
	2	attachment arm
5	3	cylinder body
	4	radial bearing
	5	inner sleeve
	6	outer sleeve
	7	pressure medium feed bore
10	8	openings
	9	clutch drum
	10	pressure medium bore